

Planning and Implementing a Statewide Telehealth Program in New Hampshire

A White Paper

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Executive Summary

This white paper is a guide to help policy makers, insurers, legislators, funding agencies, foundations, health care providers, state agencies, patients, and the entire health care system (including county and state prison health systems) in New Hampshire plan and implement New Hampshire's own statewide telehealth system. The long-term goal of a coordinated statewide telehealth program is to establish a sustainable, cost-effective telehealth network.

New Hampshire is ideal for a statewide telehealth¹ program that will improve access to healthcare and make the current healthcare system more efficient and effective for New Hampshire residents. The State has well known geographic barriers to care, completely lacks some specialty providers in parts of the state, and has large areas designated as federally underserved for primary and mental health care. Additionally, New Hampshire also has several resource-rich areas with tertiary medical centers that have the ability to provide specialty care through telemedicine. Thirty-seven percent of the population of New Hampshire live in a rural area; a greater proportion of elderly live in rural areas. The proportion of New Hampshire's population classified as elderly is expected to triple over the next 20 years. Home health monitoring in all areas of the state reduces hospitalizations, allowing elderly patients to remain in their homes. This ultimately translates into saved Medicaid dollars for the state. Also, fetal telemonitoring in emergency rooms throughout the state can eliminate the potentially catastrophic outcomes that result from high risk pregnancies.

There is consensus among a diverse group of people and organizations in New Hampshire that the State is ready for and would benefit from a statewide program. There are examples (e.g., teleradiology, home health telemonitoring, distance continuing medical education, developmental pediatric consultations) of telehealth already occurring in New Hampshire that would benefit from and flourish with the support of a statewide program. The New Hampshire program will be developed in stages from the ground up in terms of meeting identified needs. This multipurpose system will have many different stakeholders to support long term sustainability. The telehealth network would include county and state prisons, hospitals (urban and rural), community mental health centers (CMHCs), community health centers (CHCs), nursing homes, assisted living facilities, private practices, home health agencies, public education system (e.g., clinical, mental health, speech pathology), educational outreach, public health, and continuing medical education programs. It will require a parent institution that can be leveraged to provide critical resources in the start-up phase. A board of directors will provide oversight to ensure that the NH Telehealth Program meets the needs of the state.

In this process of developing a program, issues of medical licensure, privacy, security, confidentiality, and reimbursement will be explicitly addressed. In addition, the NH Telehealth Program organizers will develop a business strategy to position the program for financial success. This will involve determining which telehealth applications are in demand, setting program objectives according to their value to users of the telehealth system, and investigating all funding opportunities to ensure stable revenues.

¹ Telehealth: The transfer of electronic medical data (images, sounds, live video, and patient records) from one location to another. It includes the use of electronic information and telecommunications technologies to support long distance clinical care (patient and provider are in different locations), patient and professional health related education, public health, and health administration.

Introduction

The New Hampshire Area Health Education Center (AHEC), *North Country Health Consortium*, and Dartmouth-Hitchcock Medical Center (DHMC) sponsored a two-day conference entitled, “Telehealth New Hampshire: Technology in Practice” on June 14-15, 2004 to raise interest, knowledge, and awareness of telehealth applications in New Hampshire, and to explore the possibility of forming a statewide telehealth collaborative. As a result of the conference, the Planning Committee identified as a priority the writing of a NH telehealth white paper. The purpose of the white paper is to create a guide to help policy makers, insurers, legislators, funding agencies, foundations, health care providers, state agencies, patients, and the entire health care system (including prison health) in New Hampshire to plan and implement New Hampshire’s own statewide telehealth system.

Background

This document outlines the historical developments and current status of telehealth in the United States and New Hampshire and provides a context for the development of New Hampshire’s statewide Telehealth program. It includes a review of the literature, highlighting some of the Nation’s more successful programs, identifies New Hampshire’s unique needs, provides strategies to develop such a program, and sets forth the phases of implementation.

In many states, it is common practice to incorporate telehealth into the everyday practice of medicine, especially those with geographic challenges and underserved populations. Even though the state of New Hampshire consistently ranks as one of the Nation’s most healthy states, disparities exist. New Hampshire is an ideal state for a telehealth program, given the challenges posed by its mountainous terrain, extreme weather conditions, and rural and underserved populations. Fortunately, New Hampshire also has several resource-rich areas with *tertiary medical centers* that have the ability to provide *specialty care* through telemedicine.

The evidence-base for this white paper comes from the literature and other documents (planning committee meetings, informant interviews, and direct observation). Individuals knowledgeable of local and state issues in New Hampshire met to create a list of health care challenges facing New Hampshire and to outline those areas that may be amenable to telehealth. The coordinators then provided this list of health and educational challenges to national and international leaders in the field of telehealth and convened these leaders to provide content for writing this white paper based on the generic attributes of successful national programs, while incorporating New Hampshire’s unique needs.

Telemedicine, Telehealth, and e-Health

Telemedicine is the transfer of electronic medical data (that is, images, sounds, live video, and patient records) from one location to another. It includes the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration. The terms *telemedicine* and *telehealth* are often used interchangeably. They include both “live”, synchronous (real time), interactive televideo conferencing (ITV) sessions, and the transfer of diagnostic images or data for later review and assessment by providers, which is known as asynchronous “store and forward” telemedicine. An example of interactive televideo conferencing is a mental health visit; an example of store-and-forward telemedicine is a dermatology consult. The term *e-health* is a very broad term that covers many different activities related to the use of the Internet for healthcare. It typically refers to telehealth practices mediated specifically by computer access, including the health-related use of e-mail, accessing

Web-sites, and using electronic medical records, but the term is increasingly used in relation to patient and clinical care.

Summary of Current Literature

History of Telehealth in the United States

Health care technology leaders in the United States envisioned telehealth over 40 years ago as a means to improve access to health services for rural, underserved, and isolated populations. It was also intended to facilitate better coordination among health care providers, to deliver continuing medical education to rural providers, and theoretically to enhance cost-effectiveness and quality of care.

National Aeronautics and Space Administration (NASA) and Department of Defense (DOD) played an important part in the development and use of interactive telemedicine technology; NASA has always used remote monitoring of its crew to monitor/maintain health. NASA's International Space Station will serve as a testbed for advanced telemedicine technologies for long missions and improving the quality of healthcare on Earth. DOD has a long history of utilizing telemedicine technology to provide treatment during combat and to treat isolated military personnel. It is now standard operating procedure to set up mobile surgical suites overseas and perform surgery via telemedicine. Similarly, other government departments such as the *Office for the Advancement of Telehealth (OAT)*, have also given out substantial funds in the forms of grants for telehealth demonstration and development projects.

The term *telemedicine* was coined in the 1950s. The first documented telemedicine consultation took place in 1959. Over the last 30 years, a variety of organizational models for telemedicine/telehealth networks has emerged. Predominantly, these organizational models were developed in response to the following:

- the unmet health care needs of geographic regions of varying size
- the lack of access to essential medical services (primary care and/or specialty care) in remote areas
- the need to provide access to medical services for selected target populations
- the interests of funding sources

Most telemedicine programs in the United States support either interactive televideo or store-and-forward applications.

In the last 10 years, the federal government and others have made considerable investment in the development of telehealth networks and demonstration projects. These include two statewide telemedicine systems, Maine Telemedicine Services, and the Arizona Telemedicine Program, which we describe in more detail in the following paragraphs. Vast improvements in the reliability and capacity of interactive telemedicine technology combined with declining costs for equipment and telecommunication lines over this same period have also contributed to this growth in telemedicine programs and networks.

Maine Telemedicine Services, one of the largest statewide telemedicine systems, consists of a network with over 200 facilities shared among health, mental health, and social service organizations. The program offers a broad array of interactive videoconferencing applications, providing nearly 2,000 sessions annually. This collaborative, multipurpose system has existed since 1998, and is largely self-sustaining.

The Arizona Telemedicine Program provides improved health care delivery to the rural, underserved populations in this large state as well as greater access to continuing medical education for health professionals. The state legislature funded this program when it began in 1996 in the amount of \$1.2 million a year for four years. This State opted to continue financial support of the telemedicine program because it recognized the value of the program to its residents. Today, the Arizona Telemedicine Program is well-recognized as one of the foremost in the world, largely due to the fact that telemedicine services are so well integrated into routine office practices and systems. In addition, the Arizona Telemedicine Program provides prison telehealth to the Arizona Department of Corrections (DOC). This service results in substantial savings for the DOC, provides major revenues to the Arizona Telemedicine Program, and is extremely well-received by inmates.

The Telehealth Consultation

Patients and their primary care providers have had teleconsultations by telephone for many years. New technologies now allow for the following more robust types of telehealth consultations:

Interactive Televideo Conferencing

- adds a visual dimension to the audio of the telephone
- enables assessment of some physical signs directly
- has a record of success in providing mental health care services
- occurs in real time (referred to as *synchronous telemedicine*)
- is an effective medium for providing continuing medical education to sites at a distance

Store-and-Forward Telemedicine

- visual images such as X-rays (teleradiology) and photographs of skin lesions (teledermatology) are scanned, digitized, and uploaded to a computer and sent electronically to a physician's computer for later review
- allows specialist to view image and report results at his/her convenience (referred to as *asynchronous telemedicine*)

Home Health

- operates over standard low-bandwidth phone lines – Plain Old Telephone System (POTS)
- uses relatively inexpensive videophone units placed in the home
- base station is located at home health office
- allows improved monitoring and management of patients with chronic conditions

Why New Hampshire Needs Telehealth

Overview of the Need

One barrier to accessing health care is simply having the means to get to the doctor's office; a second is finding a doctor who can see you.

Interactive telemedicine services are an appealing health care delivery model for large areas of New Hampshire due to geographic isolation, scarcity of local specialty medical services, and prolonged periods of hazardous winter driving conditions. Poverty, poor economic conditions, and a percentage of elderly residents higher than the State average in much of rural New Hampshire make it especially difficult for residents to travel to obtain needed specialty care and reach tertiary medical centers. Residents in some isolated areas have difficulty even accessing *primary health care*. Geographic isolation also presents a barrier to clinical providers taking advantage of educational opportunities that might improve their professional capabilities.

The challenge of addressing these gaps and disparities will only increase in the coming years in the face of the projected growth of the elderly population, the State's already high health care costs (especially evident in health insurance premiums and costs for long term care) and high rates of health professional shortages and turnover.

Access to Health Care

A statewide telehealth program improves access to healthcare and creates greater efficiency and effectiveness in the existing healthcare system for New Hampshire residents, including those living in urban areas. Some geographic areas of New Hampshire lack specialty providers (refer to attached maps for Dermatologists, Pulmonologists, Gastroenterologists, and Psychiatrists). Large portions of New Hampshire have federal designations for primary care and mental health care shortage areas, as well as a designation for an underserved medical area (refer to attached *Health Professional Shortage Area*, *Mental Health Professional Shortage Area*, and *Medically Underserved Area* maps).

Thirty-seven percent of New Hampshire's population live in rural areas of the state; there are well-documented disparities relating to access to care, health status, and health outcomes between the populations in rural and non-rural areas. Advanced age, educational attainment, employment status, and household income have profound implications for health and health care. If we compare rural areas with non-rural areas, people living in rural New Hampshire:

- have a 48% higher rate of psychiatric admissions
- are 48% less likely to have health insurance
- are 32% more likely to be elderly
- have a 20% higher rate of sub-high-school education
- have a 35% higher rate of unemployment
- have a 20% lower family income
- are twice as likely to use Emergency Medical Services for non-emergency calls

Enhancing the delivery of healthcare to medically-underserved rural areas was a primary goal behind the federal government's investment in telehealth. Typically, medical specialists are concentrated in urban areas and tend to work in association with large hospitals, and such is the

case in New Hampshire. Having significant numbers of patient consults with specialists via a telemedicine link from a local health care facility will likely yield a number of benefits:

- improved access to health care and mental health care services
- reduction in the cost and stress of patient travel to receive health care
- enhanced quality and continuity of care, as the primary medical provider retains more control over patient care
- improved economic development, as the local health care facility retains revenues for medical tests and procedures recommended by the specialist
- strengthened existing referral relationships between primary care and consulting providers, and in some cases, better communication leading to more useful exchange of medical knowledge
- enhanced image of the local health facility within its community because of the availability of telemedicine services
- improved recruitment and retention of physicians, since a telemedicine system can reduce the sense of professional isolation experienced by family physicians and other primary care providers,
- increased pool of specialists accessible to patients
- improved access to continuing medical education

The following are actual telehealth solutions that benefit people living in both rural and urban areas:

- School-based systems effectively deliver acute and specialty health and psychiatric care.
- Obstetrical monitoring with access to perinatologists in emergency rooms reduces incidence of catastrophic events in high-risk cases.
- Low tech telemonitoring allows parents to bond with their infant who may have a long stay in a neonatal intensive care unit.
- Telehome monitoring improves outcomes and reduces hospitalization, particularly for heart failure patients and the elderly who have transportation issues.
- Using telemonitoring, young school-aged children with lengthy hospitalizations are able to attend some of their classes.
- Videophones allow families to “visit” hospitalized children when they cannot be together in person.

Cost Effectiveness

The proportion of New Hampshire's population classified as elderly is expected to triple over the next 20 years, increasing from 11.9 percent in 1995 to 18.9 percent in 2025. This increased number of senior citizens will add more stress to the State budget, as the demand for hospitals, nursing home beds, and public transportation grows.

New Hampshire Medicaid is under considerable financial strain, as are the majority of state medicaid programs. Home health has been shown to reduce hospitalizations, which ultimately translates into saved Medicaid dollars for the state. Although health care costs of elderly patients

who are able to remain in their homes are shouldered by the individual and by Medicare, once frail older patients are hospitalized, they often end up in a nursing home, which eventually involves New Hampshire Medicaid dollars.

Since many providers will not see Medicaid patients, more costly care is required down stream through Medicaid when these patients become sicker and are forced to travel to a provider that accepts Medicaid. Telehealth can prevent this scenario and save New Hampshire dollars by treating such patients earlier with another medical provider through telemedicine.

Medications are one of the greatest sources of cost for the Medicaid program's budget. Eight of the 10 most expensive medications covered by New Hampshire Medicaid are used for the treatment of mental illnesses. A telehealth system that includes telepharmacology could help control, even reduce, these costs for the state. Telepharmacology can also improve patient care by providing peer-to-peer consults to help manage these medications, suggesting alternatives when appropriate, safer ones when substitution is feasible, and adjustments in dosing to avoid side effects and complications.

Goals of Developing a Coordinated Statewide Telehealth Program

The primary long-term goal of a coordinated statewide telehealth program is to establish a sustainable, cost-effective telehealth network. The desired outcomes include:

- improved access to appropriate health, education, mental health, and social services for residents throughout New Hampshire, creating greater efficiency and effectiveness in the existing health care system
- access to high quality of care
- savings in travel costs for both patients receiving care and providers delivering care
- a clinically effective telemedicine solution for all providers
- reduction or elimination of federally designated Health Professional Shortage Areas (HPSA), Mental Health Professional Shortage Areas (MHPSA), and Medically Underserved Areas (MUA) due to better access to medical care for rural and underserved populations.

Major Components of a Telehealth Program

Telehealth Infrastructure in the United States

The successful implementation of a telemedicine system in the United States has proven to depend on the following factors:

- what telehealth applications are proposed (e.g., diagnosis and treatment, consultations to other providers, home health monitoring, dispensing prescriptions, continuing medical education)
- where services are provided (e.g., in-house, within a medical system, regionally, across state borders, or internationally)
- how the model operates

Telecommunications

The infrastructure for telemedicine includes both telecommunications capacity and the equipment used. Costs for both have been a major barrier to the development of telemedicine networks but have become less so over the past decade. Systems that cost \$60-80,000 in 1995 now cost less than \$10,000, and recurring monthly line charges are also declining.

Many areas of the country, New Hampshire included, do not have a massive state-funded high-bandwidth infrastructure. In remote rural areas, where ISDN lines are not available, somewhat more expensive *T1 lines* (\$1,200-\$1,300/month) have been engineered as “virtual ISDN” lines. Disparities in telephone line costs between rural and urban sites can also be an issue. However, programs established under the Federal Communications Commission’s Universal Services Administrative Corporation (USAC), such as the Rural Health Care Program, subsidize these differences for rural telemedicine programs.

Given that most hospitals have data networks based on the *Internet Protocol (IP)*, it is important that telemedicine equipment operate using IP transmission and link with ISDN-based and other communication backbone networks via interfaces and *bridging systems*.

Reimbursement

The major barrier to the growth of telemedicine has been the limitation on the range of telemedicine services covered through reimbursement from public and private insurance programs. As with other medical treatment innovations, the policies for Medicare coverage determined by the *Centers for Medicare and Medicaid Systems (CMS)* set the trend for other insurance providers on what services receive reimbursement. CMS has moved slowly in expanding telemedicine coverage because of a theoretical fear that health care costs would increase due to improved access.

In 2000, Medicare passed provisions for home telehealth that make it acceptable for home health agencies to use interactive video sessions and monitoring devices to supplement skilled nursing services in providing home health care. Under the *Prospective Payment System (PPS)* instituted in 2001, reimbursement rates are tied to intensity of home care services. Although substituting televisits for in-person visits is not approved as a direct strategy for cost savings, a recent policy restatement makes it clear that the primary care provider has discretion to specify levels of both in-person and telehealth visits.

In comparison to the slow expansion of Medicare reimbursement for telemedicine, the local state government Medicaid programs have been fairly comprehensive in their coverage policy since about 1998. Medicaid programs in more than 25 states are providing reimbursements for telemedicine, in part because of the clear prospect of reduced medical travel costs, which most state Medicaid programs cover.

With respect to private insurance coverage, approximately a dozen states have a comparably favorable environment for telemedicine reimbursement. For others, policies are not explicit, but many are known to pay for services. A few states, including California, Texas, and Louisiana have resorted to a legislative mandate for private health insurance companies to cover care delivered using telemedicine.

Liability

There had been concern that having a provider from one health care organization use electronic media to give medical care to a patient at a remote facility would increase the risk of malpractice issues – such fears have not been realized. In the early days of telemedicine, there was a concern

that a consulting physician who was not in the room with the patient might be more likely to miss a diagnosis, and therefore have increased liability. Fortunately, time has proven this to be theoretical and not reality. Additionally, the policies of malpractice insurance companies have not represented a real barrier to the practice of telemedicine. For example, the largest malpractice insurance carrier for physicians in Maine requires a simple notification that a doctor plans to use telemedicine approaches, but does not charge a higher premium for those who do so.

Licensing/Credentialing/Privileging

State government licensing of medical providers becomes a barrier for telemedicine when services are provided between states and countries. When a patient in one state carries out an interactive telemedicine session with a doctor in another state, the laws of most states interpret the consultation event as equivalent to the physician having traveled to treat the patient and hence must be licensed in that state. The Federation of State Medical Boards proposed a national telemedicine licensing law, but the Board lacked the necessary momentum for successful implementation of the proposal. Instead, as of 2002, 19 states had passed laws or enacted regulations that effectively prohibit telemedicine treatment of a resident patient by a physician unlicensed in that state. However, these laws or regulations often include exceptions or provisions for specialty care consults in which the primary care physician retains responsibility for recommended treatment.

State regulations and hospital by-laws on the credentialing and privileging of physicians present a significant barrier for telemedicine. Credentialing refers to the documentation process that confirms a provider's professional education, training, and experiences, while privileging corresponds to the rights that an organization bestows upon adequately credentialed providers to practice medicine at a particular facility, such as a hospital. In 2001, the principle agency which accredits hospitals, the *Joint Commission on Accreditation of Healthcare Organizations (JCAHO)*, established a policy that would allow one JCAHO-accredited organization to accept by agreement or contract the credentialing documentation maintained by another such organization, so long as the facility receiving the telemedicine service makes the decision to define privileges for the provider. Despite this clarification, health care organizations have been slow to adopt such practices because state enforcement agencies have not publicly endorsed the policy, and hospital administrations have not amended their by-laws.

Privacy/Security/Confidentiality

The electronic exchange of video and clinical data has the potential of inadvertent breaches of patient-provider confidentiality. Telemedicine practitioners have greatly increased their focus on these issues since the recent passage of the *Health Insurance Portability and Accountability Act (HIPAA)* and its provisions on protection of personal health information that were implemented in 2002. Fortunately, compliance with this act for most forms of telemedicine requires attention to standards of practice already commonly implemented by information systems of health care organizations.

Unlike the Internet, the digital lines, such as ISDN, used for carrying interactive video are essentially private channels linking sites involved in a point-to-point telemedicine session and have limited risks of interception. Nevertheless, HIPAA calls for organizations providing telemedicine, as with other medical services, to define and enforce operational procedures that preserve client control and the confidentiality of health data, to support information privacy throughout an organization, and to institute systems for ongoing assessment and revision to improve these procedures.

Recently, the Office for the Advancement of Telehealth (OAT) worked with the Advanced Technology Institute to identify through telemedicine scenarios and procedural reviews, the most common ways that personal health information privacy may be compromised. For example, on both the referring and consulting sides of a telemedicine session, special care must be taken to address the increased risks that patient information may be accessed by technicians or other non-clinical staff involved with maintaining equipment or scheduling the session. Protocols should also be in place to attend to the security of temporary repositories of identifiable medical information such as e-mails, images, or video files stored on computers or elsewhere. Also, patients need informed consent procedures, which convey an understanding of:

- who will be involved in the session and whether there are any others off-camera who might be able to see and hear communications with the provider
- who will be responsible for treatment and the associated maintenance of medical records
- who will be responsible for the potential limitations in the technology employed, including risks of information disclosure

Business Models for Telehealth Sustainability

The terms e-health, telehealth, and telemedicine have been widely used to describe the application of information, computer, or communication technology to some aspect of health or health care. The literature on business models that are focused on telemedicine or telehealth is difficult to elucidate in a meaningful way, as the above-mentioned terms have not been consistently defined. Typical telehealth business models focus on access to care, cost savings, and access to market.

The Arizona Telemedicine Program is reported to have successfully expanded and is moving toward self-sustainability. Application service provider programs like Arizona's focus on core telemedicine network services with cost-recovery from site memberships and other centralized mechanisms to offset the cost of operating the statewide infrastructure.

The Maine Telehealth Network operates in a similar manner, with an open architecture (which allows easy connectivity between and among sites statewide), collaborative telehealth network, leveraged lower costs of many value chain activities, such as technical support, and other services for network participants through economies of scale.

A recent presentation given by experienced telehealth program leaders at the annual grantees meeting of the *Health Resources and Services Administration (HRSA)* Office for the Advancement of Telehealth (OAT) 2004 outlined the following strategies that can enhance the business model for sustainability of grant-funded demonstration projects:

- position telehealth as a cost center (i.e., a necessary and integral component of cost of doing business)
- position telehealth as a magnet that attracts external funding and research (e.g., bioterrorism)
- focus on *value* for the host and network partners
- look for contracts that help pay for overhead expenses
- expand the number of stakeholders and encourage their dependence on telehealth
- leverage telehealth as a public relations tool

- market telehealth as an attractive service to engage the interest and involvement of legislators, the Governor, and others for media and education uses
- secure a line item on the state budget
- explore relevant avenues of financial support (e.g., tobacco settlement, prison health contracts)
- promote educational presentations on medical topics (grand rounds) to rural providers
- support medical students on rural rotations

Dena Puskin, Director of the HRSA Office for the Advancement of Telehealth, advocates that all options for long-term funding of telehealth systems be explored, including charging users, negotiating for reduced transmission costs, and cross-subsidization and integration of program-level planning with the long-term financial planning of the organization – a practice that is not unusual in the health care field, where one service is often used to subsidize another.

Strategies to Develop a NH Telehealth Network

Existing Telehealth Programs and Needs

There are some isolated examples of telehealth occurring in New Hampshire, including a continuing medical education series through Dartmouth-Hitchcock Medical Center, home health monitoring, radiology, and developmental pediatric consultations with schools throughout the state. They represent a spontaneous generation of programs in response to local health care needs. However, such programs tend to struggle because they are isolated. In telehealth, using a network as opposed to disparate providers using such technology allows for maximizing resources, avoiding duplication, combining efficiencies, and creating the opportunities to share successful models.

In August 2003, North Country Health Consortium convened a group of people who were interested in planning a statewide telehealth conference in New Hampshire. The group included representatives from home health, rural health, public health, state agencies, developmental pediatrics, and information systems, as well as funders and the telecommunications and equipment vendors needed to run a telehealth program.

At the first ever statewide telehealth conference in New Hampshire, “Telehealth New Hampshire: Technology in Practice”, sponsored by the New Hampshire Area Health Education Center Program (AHEC), North Country Health Consortium (NCHC), and DHMC in June 2004, representatives from all the groups that attended the August convening came together, some not aware of initiatives elsewhere in the state. The conference was a resounding success, drawing nearly 150 attendees and meeting its goal of raising interest, knowledge, and awareness of telehealth opportunities in New Hampshire. Thirty attended a luncheon meeting and charged the original conference planning committee with exploring the creation of a statewide program.

The NH Telehealth Planning Committee will prioritize the action items from the NH Telehealth Conference strategic planning session. As a NH telehealth network develops, the Planning Committee will function in an advisory capacity, and will assist in identifying other stakeholders to ensure that the State’s entire health care system has an opportunity to be involved in this collaborative project.

From that conference and subsequent planning meetings, it is clear that a tremendous need for telehealth services exists in New Hampshire. Rural hospitals are looking for administrative

support from larger urban hospitals that could be provided through telehealth. Specialty health clinics are in demand, and telehealth offers the opportunity to expand the reach and access to specialists who are few in number. For example, there are few child psychiatrists and geriatric psychiatrists in the state. Hospital administration, home health agencies, and mental health programs all experience unmet needs and have interest in a statewide program. Despite the clear need, there is no statewide telehealth program in New Hampshire, due to the lack of the organizing force and start-up funds necessary to create the infrastructure (equipment) and develop and institute a plan.

Business Strategy

The New Hampshire Telehealth Program's business strategy will require its organizers to determine how to position the program financially based on the perceived value of the program. There are three basic strategies that telehealth programs can employ for financial success.

- **Revenue Generation.** In this strategy, the telehealth program has the capacity to generate revenue from a variety of sources. Revenue can be generated through contracts and grants, earmarks or niche funding, clinical revenue (although this is generally not considered program support because practitioners must be reimbursed), membership dues, program charges (i.e., CME), the Universal Service Fund (reimburses rural telecommunications costs), and philanthropy.
- **Expense Reduction.** In this strategy, the telehealth program can realize a cost savings through telehealth. Department of Corrections programs construct their business plan around this strategy. However, there are other costs savings that can be considered. For example, Medicaid programs generally pay transportation costs; providing these services through telehealth can decrease travel expenses. Circuit rider practitioner costs can also be reduced by implementing a telehealth program. Another cost savings, which is more difficult to quantify, includes early intervention or prevention. If clinical services are available more conveniently, patient compliance could increase.
- **Cost Center or Loss Leader.** In this strategy, the telehealth program is funded by a parent organization with the understanding that the program requires sustained funding. However, the perceived benefits of the program (social, public relations, convenience to all users of the telehealth system) are important enough to justify the cost.

Some programs employ a hybrid of the three strategies to sustain financial success. For example, the Arizona Telemedicine Program generates revenue through its membership model, clinical revenue, contract and grant acquisition, and universal service program funding. The program also realizes expense reductions through fewer inmate transports, lower Medicaid travel expenses, and less demand for circuit riders. Additionally the State has continued its (cost center) base funding for the program because of the perceived value to its constituents.

The New Hampshire Telehealth Program should analyze all three of the above strategies to determine which best fits its needs. These strategies are not static, but can change over time as a program matures. However there are some basic considerations a telehealth program should ponder as it sets its business strategy.

- Assess the demands of all users of the NH telehealth system, and address only those areas that need to be “supplied” (the supply and demand concept). There may be only a few applications that are really in demand.

- Determine the value to users of the telehealth system, and set program objectives accordingly. It is important to clearly understand why a telehealth program is being initiated.
- Investigate all funding sources. For example, there are a variety of government agencies and programs that fund telemedicine activities. However, recurring or more stable revenue sources must also be sought, such as clinical revenue, user memberships, distance education, and parent organization support.
- Work with third party payers to ensure clinical activities are reimbursed. For example, in Arizona the most difficult payer is Medicare; all other third parties reimburse for a full range of telehealth activities as long as agency policies and procedures are followed.
- Promote the telehealth network as an economic benefit, where members with excess capacity can provide services, and those with scarce services can obtain them.
- Perform studies to illustrate cost savings where indicated (e.g., corrections medicine, Medicaid, circuit riders, etc).
- Find as many uses for the network as possible (e.g., clinical, education, administrative).
- Integrate the telehealth objective into an organization's mission and strategic plan to obtain support.
- Integrate telehealth clinical services into the daily clinical workflow for ease of use.
- Identify a champion during implementation to help ensure success.

Telehealth Network Participation

The network will include county and state prisons, hospitals (rural and urban), community mental health centers (CMHCs), *community health centers (CHCs)*, nursing homes, private practices, home health agencies, assisted living facilities, the public education system (e.g., clinical, mental health, speech pathology), educational outreach, justice system (e.g., diversion programs, adjudication between county jails and court houses), public health, and continuing medical education.

Clinical Applications

The network will provide the infrastructure and personnel support to organize and conduct distance specialty and subspecialty consultations in many clinical areas. Initial activity will be focused on psychiatry, dermatology, radiology, and home health. Specialty involvement will only be limited by the availability of the specialist in New Hampshire. Besides distance clinics, real-time emergency department and trauma consultation will be possible and could include occupational health, as well as support of school health programs.

Department of Corrections

The high cost of medical care for prisoners is well recognized. A National Institute of Justice (NIJ) report indicates that face-to-face health care consultations for prisoners cost an average of \$173, whereas a telemedicine consultation costs an estimated \$71. Telehealth is a proven solution to reducing these costs while improving quality of care and prisoner satisfaction and

compliance with their care; in addition, using telehealth eliminates concerns for public safety during transport to out-of-prison health care facilities.

Home Telehealth

In the coming years, health care will increasingly be provided in people's homes. Equipment necessary for such care continues to decline in cost and at the same time become easier to use. Home monitoring of weight and vital signs has been shown to reduce emergency department admissions for congestive heart failure. Monitoring of blood sugar is also possible, and programs exist allowing for patients to visit a virtual clinic for continuation of care between office visits. These practices have been shown to improve diabetic control, which decreases diabetic complications and health care expenses. Video conferencing is also possible for real-time visits.

Sustainability

The Planning Committee will explore all long term options for funding of telehealth systems. The network will have multiple purposes, thus allowing for the subsidization of non-revenue generating applications by applications capable of producing revenue. There will be a user fee and negotiated rates for the lowest transmission costs. Hospitals and private practices will be able to bill for their clinical work. In addition, the NH Telehealth Program will seek state government support to maintain the system in terms of its clinical and educational mission. Outside grants will be essential for the research and development aspect.

Governance

Establishing a governance board for the NH Statewide Telehealth Program will be an essential step in the planning process. Members of this board will consist of key stakeholders and partners, including hospitals, professional practitioner groups, utility companies, funders, payers, community health centers, physicians, and state government agencies. The governance board will:

- develop mission and vision statements
- create brand recognition for the NH Telehealth Program
- direct the strategic planning, implementation, and deployment of the NH Telehealth Program
- establish partnerships within the state legislature

The administrative base for the NH Telehealth Program should have access to a high quality business office that is well-versed in practice management and reimbursement. In addition, this site should have expertise in rural and underserved health care issues, and grantwriting. An ideal location would be one that has access to resources to assist a program in its formative stages but can function with a high degree of autonomy.

Evaluation

Review of the literature and discussions with opinion leaders revealed that the following were the questions to ask in order to evaluate a statewide telehealth program's success in New Hampshire:

- Does the program fill a defined clinical or healthcare delivery need?
- Is organizational support evident?

- Is the program accepted by physicians and patients?
- Are measurable outcomes and costs available?
- Is the program self-supported or sustainable?

In many respects, the telehealth programs in Arizona and Maine, two of the most successful, meet the above criteria at this time and have provided input in developing this position paper. The key attributes of their models merit emphasis in the development of a telehealth program for New Hampshire.

Future Applications

Leaders in telehealth envision significant advances in the next couple of years. Ultra-turnaround time is on the horizon. Patients will be able to be evaluated by a specialist, have laboratory and other tests performed with same day results, and have a treatment plan communicated to the primary care provider and patients within eight hours.

Intensive care units in isolated areas will be supported by remote intensive care specialists. These e-ICUs (electronic intensive care units) will expand the capability of hospitals in rural and underserved areas.

Assisted living facilities will be connected to a network, allowing each individual to be monitored by their primary care provider and receive ongoing care via a virtual clinic (when an office visit is not feasible or necessary).

Phases of Implementation

The first phase will be to obtain a planning grant to secure key personnel to conduct a more detailed environmental scan of New Hampshire's demographics and logistical issues. The demographics would include an evaluation of the population distribution (rural vs. urban), geographic challenges, access issues for specific needs created by lack of a clinician's or patient's inability to travel, number and size of hospitals, specialty capability, physician shortage areas, prison population (number of out-of-facility medical encounters), nursing home population, disease profiles, and existing telehealth programs. The planning phase would address logistical challenges (including, reimbursement, technical infrastructure, available personnel with experience in telemedicine, existing technology, credentialing and licensure) that are discussed in depth in previous sections of this paper. Much of this information will be obtained through detailed surveys, site visits with health care administrators and providers, and focus group sessions with various constituencies. During the planning phase, funding sources for the implementation phase will also be identified.

The next phase will be to use the information from the demographic and logistical evaluation to create grids of care needs and existing telehealth infrastructure in order to develop a comprehensive program to meet New Hampshire's needs. During the implementation phase, multiple funding sources will be sought to allow for a robust and dynamic network with an emphasis on sustainability. For example, the United States Department of Agriculture's Rural Utility Service's Distance Learning and Telemedicine Grant Program funds equipment and telecommunications connection devices, but will not pay for staffing telemedicine programs. On the other hand, the New Hampshire Endowment for Health and the federal Office for Advancement of Telehealth's grant program may fund staff to implement a program. The Universal Service Fund gives health care organizations substantial discounts for telecommunications costs. Public and private insurance companies reimburse for a variety of

telehealth applications. Coordinating and combining multiple sources of funding and reimbursement will lead to a self-sustaining program.

A multipurpose telehealth system that is used by a variety of groups and includes non-medical uses will be essential to survival. Education of citizens will also be a key component, particularly in the areas of Homeland Security and Public Health. NH telehealth planners will collaborate with legislators, government officials, New Hampshire Department of Health and Human Services, and the NH Department of Safety, Emergency Services Division, and other identified stakeholders through all phases of this project. Education conferences will be expanded and advocacy committees will seek to inform policymakers and the public.

Glossary of Terms

Bridging systems

Telecommunications devices that connect local area networks.

Community Health Center (CHC)

An ambulatory health care program usually serving an underserved or shortage area with scarce or nonexistent health services or a population with special health needs.

Centers for Medicare and Medicaid Services (CMS)

Federal agency that administers the Medicare program, and works in partnership with the States to administer Medicaid, the State Children's Health Insurance Program (SCHIP), and health insurance portability standards.

Health Insurance Portability and Accountability Act (HIPAA)

A law enacted by Congress to encourage national standards to protect the privacy of Personal Health Information (also known as PHI).

Health Professional Shortage Area (HPSA)

Federal designation for rural and urban geographic areas, population groups, and facilities with a shortage of health professionals.

Health Resources & Services Administration (HRSA)

The federal agency that improves and expands quality health care for low income, uninsured, isolated, vulnerable and special needs populations.

Internet Protocol (IP)

A set of protocols that supports videoconferencing on the internet.

Integrated Services Digital Network (ISDN)

This is a digital phone service that can be used for videoconferencing. Multiple lines can be used simultaneously to provide more bandwidth. The higher the bandwidth, the better the quality of the videoconference.

Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

A national, private, nonprofit organization whose purpose is to encourage the attainment of uniformly high standards of institutional medical care. Establishes guidelines for the operation of hospitals and other health facilities and conducts survey and accreditation programs.

Mental Health Professional Shortage Area (MHPSA)

Federal designation for rural and urban geographic areas, population groups, and facilities with a shortage of mental health professionals.

Medically Underserved Area (MUA)

An area determined by the federal government to have inadequate access to health care.

North Country Health Consortium (NCHC)

A rural health network located in Littleton, New Hampshire that addresses common issues through collaboration among health and human service providers serving Northern New Hampshire.

Office for Advancement of Telehealth (OAT)

The federal Department of Health & Human Services created OAT to promote the wider adoption of effective telecommunications and information technologies in providing health care services to the nation's underserved people.

Prospective Payment System (PPS)

A system wherein reimbursement rates are set, for a given period of time, prior to the circumstances giving rise to actual reimbursement claims.

Primary Health Care

Basic or general health care traditionally provided by doctors trained in family practice, pediatrics, internal medicine, and occasionally gynecology.

Specialty Care

Specialized health care provided by physicians whose training focused primarily in a specified field, such as neurology, cardiology, rheumatology, dermatology, oncology, orthopedics, ophthalmology, and other specialized fields.

T-1 lines

Communication lines that transmit data at high bandwidth.

Tertiary Medical Center

A hospital that has personnel and facilities for special investigation and treatment where specialized consultative care, usually on referral from primary or secondary medical care personnel (Secondary medical care is the medical care provided by a physician who acts as a consultant at the request of the primary physician.)

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